MAKING A WATER LENS

PHYSICAL SCIENCE / EASY LEVEL

Introduction

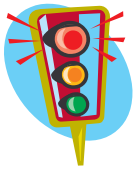
Lenses are used to *focus* light and are normally made from plastic or glass. In this experiment, you will make a "lens" out of water.

Time Needed

30 minutes

What You Need

- newspaper (2-page spread)
- clear plastic wrap (enough to cover the newspaper)
- eyedropper
- water



Safety Precautions

What You Do

1. Lay out a sheet of newspaper.
2. Cover the newspaper with a layer of plastic wrap.

3. Using the eyedropper, put a drop of water onto the plastic (Figure 1).

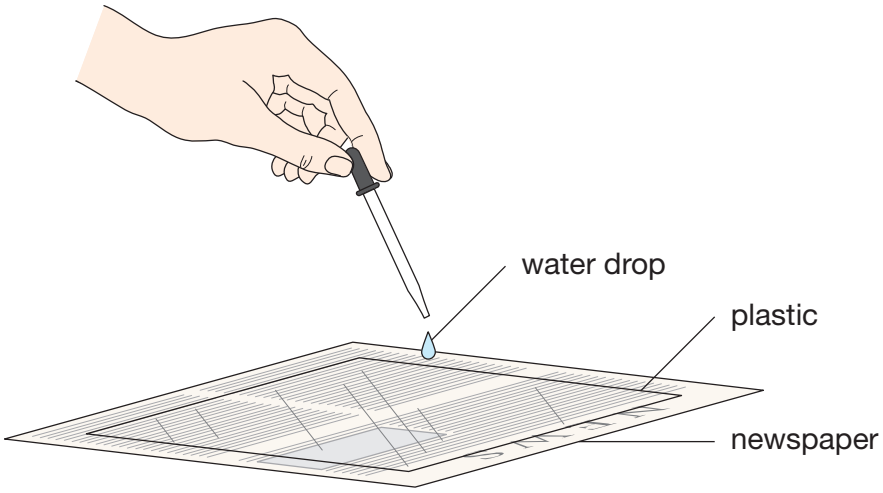


Figure 1

4. Observe the water drop, especially its shape. Also, look at the newspaper print through the water drop.
5. Add a few more drops of water and repeat step 4.

Observations

1. What did you notice about the shape of the water drop?
2. What happened to the print on the newspaper when you looked through the water?
3. Why do you think the lenses of glasses are curved the way they are?

1.0 SAFETY GUIDELINES

GENERAL

- Always obtain your teacher's permission for experiments performed at school, and your parent's permission for experiments performed at home, before attempting any experiment.
- Read all instructions for an experiment several times before starting the experiment, and follow the directions exactly as they appear in this volume.
- If an experiment requires adult supervision, do not perform the experiment unless you have an adult supervising you the entire time you are performing the experiment.
- Wash your hands before the start of and after each experiment you perform.
- Keep your work area clean.
- Never eat or drink while performing a lab experiment. Never taste a substance used in an experiment unless you are told that it is safe to do so.
- Be aware of the location of safety equipment you may need in an emergency, such as running water, an eyewash if you are at school, and a fire extinguisher.
- If you are going outside, make sure you have permission to go from your teacher and parent. Take a buddy with you, and dress appropriately for the weather. Make sure you or someone who accompanies you is familiar with the area, and bring along a first-aid kit in case of an emergency.
- Never look directly into the sun.

CHEMICAL SAFETY

- Always wear goggles when working with chemicals, such as acids and bases, and near heat sources like flames. If at all possible, avoid wearing contact lenses when working with chemicals.
- If any substance gets into your eyes, notify an adult (e.g., your teacher or parent) immediately, and flush your eyes with running water for at least 15 or more minutes. Do not mix chemicals unless you are told to do so by a teacher or parent.

- Never touch, taste, or smell chemicals unless instructed to do so.
- Keep chemicals in closed containers when they are not in use.
- Dispose of all used chemicals properly. Do not pour any chemicals or solids down the drain unless instructed to do so.
- Use safety gloves and a plastic apron when handling chemicals. If any chemicals spill on your skin, rinse the affected area with running water for at least 10 minutes, and notify your teacher or parent immediately.
- Take precautions to avoid spilling chemicals. If a chemical spills on any surface, notify your teacher or parent immediately to assist with clean-up.
- Exercise caution when using sharp instruments such as knives or scissors. Always cut away from yourself, not toward yourself. If you cut yourself, notify your teacher or parent immediately.

GLASSWARE

- Clean glassware when you are finished with the experiment.
- Be careful when using glassware. If a piece of glassware breaks, have an adult assist you in clean-up to avoid injuries from broken glass. Never use broken or damaged glassware.

FIRE SAFETY

- Do not heat glassware that is not completely dry. Do not pick up hot glassware without heat-resistant gloves or tongs.
- When heating glassware, keep it away from yourself and from others.
- Do not heat anything unless instructed to do so by a teacher or parent.
- Do not heat substances in a closed container.
- After an experiment, make sure that all heating sources are off and that all flames have been put out.
- Do not reach across such heating sources like flames.

- If you have long hair, tie it back, out of the way. Do not wear clothing with loose sleeves, scarves, bows, ties, or anything else that may hang into a fire. Do not wear long earrings.

ELECTRICAL SAFETY

- Do not touch electrical equipment when your hands are wet.
- Do not plug many electrical devices into one outlet or use an extension cord.